

PATENT APPLICATION
ATTORNEY DOCKET NO.: BDE-001CN (413/6)**A SYSTEM FOR AGGREGATING INFORMATION
FROM ENTERPRISES OFFERING ITEMS FOR EXCHANGE
OVER A COMMUNICATION NETWORK****Reference to Related Applications**

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~~This application is a continuation of co-pending U.S. patent application Serial No. 09/428,702, entitled "A System For Aggregating Information From Enterprises Offering Items For Exchange Over A Communication Network," filed October 27, 1999. This application also claims the benefit of co-pending U.S. provisional patent application Serial No.60/154,667, entitled "System and Method for Identifying and Monitoring Auctions Across Multiple On-line Auction Sites," filed September 16, 1999. The disclosures of both of the above cited applications are hereby incorporated by reference.~~

Field of the Invention

The present invention relates to a system for monitoring enterprises that offer items for exchange over a communication network. In one embodiment, the invention is directed to an automated system enabling shoppers to search for items offered for exchange at a plurality of electronic auction sites, and to place bids on, monitor, and/or track selected items.

Background

Electronic commerce ("e-commerce") over the Internet is growing rapidly. Both retail and wholesale suppliers have entered the e-commerce arena, selling a variety of goods and services. A challenge for shoppers in the e-commerce arena is not only to locate a desired good or service (collectively "an item"), but also to locate the desired

item at the lowest available price. One e-commerce industry addressing this challenge is the on-line auction industry.

Accordingly, on-line auctions are a rapidly growing segment of the overall e-commerce marketplace. In the context of the Internet and the World Wide Web ("Web"), on-line auctions have become very popular, consisting primarily of Web site companies offering their items for purchase in a merchant-to-person format. Other companies offer items for purchase in a person-to-person format. The person-to-person format is similar to posting a bulletin board of classified advertisements. Current estimates are that at least 5,000,000 people have participated in on-line auctions, with person-to-person auctions presently accounting for \$1.4 billion (70% of the market). Analysts expect that within four years merchant-to-person auctions will account for 66% of a \$19 billion market. A third type of on-line auction is the business-to-business auction. Business-to-business auctions are dedicated to a particular product or service category, and are estimated to reach over \$80 billion within the next four years.

The various types of auction sites described above function in a similar manner. Typically, a shopper accesses a Web site of the particular auction and places bids on one or more of the offered items. If a shopper wishes to place bids on items at more than one auction site, conventional systems typically require the shopper to access each of the Web sites individually to obtain information regarding the items up for auction at each site, and to register bids on the items in which the shopper is interested. Prior art systems also, typically, require shoppers to return to each of the individual auction sites every time they want to check on the progress of their bids, place higher bids, obtain information about new items available for auction, and the like. Prior art systems further

require shoppers to track the items on which they have placed bids at multiple auction sites, along with the account information registered with each of the auction sites, to follow the progress of the bids or to compare bids and pricing among similar items across multiple auction sites.

5 Further examples of on-line or network-based auction sites or services, operated similarly to the description above, and other types of on-line services providing some system for bidding on or purchasing items, or redeeming awards for items, offered or inventoried by the services, include U.S. Patent Nos. 5,835,896 to *Fisher et al.*; 5,794,210 to *Goldhaber et al.*; 5,715,402 to *Popolo*; 5,826,244 to *Huberman*; 5,774,873 to *Berent et*
10 *al.*; 5, 794,219 to *Brown*; 5,855,008 to *Goldhaber et al.*; 5,915,209 to *Lawrence*; 5,774,870 to *Storey*; 5,794,207 to *Walker et al.*; 5,715,314 to *Payne et al.*; 5,913,202 to *Motoyama*; 5,890,138 to *Godin et al.*; 5,862,223 to *Walker et al.*; and 5, 818,914 to *Fujisaki*; along with EP 828,223 A2, EP 628,920 A1, JP 07-296082, and CN 1201202A, the disclosures of which are all hereby incorporated by reference.

15 Due to the recent proliferation of on-line auction sites available to shoppers, the requirement under conventional methods and systems to access each of the sites individually, and to manually accumulate information across multiple auction sites for purposes of tracking, comparing bids, comparing product description and determining availability can be a time consuming and inefficient process.

20 Additionally, if a shopper wants to ensure purchasing an item for the lowest available price, the shopper typically must also monitor retail and wholesale providers of items. Shoppers also need to monitor electronic trading sites, which rather than offering items for purchase, offer items for trade.

Accordingly, an object of the invention is to reduce the above described time consuming burdens on e-commerce shoppers generally, and on on-line auction participants, specifically.

Other general and specific objects of the invention will in part be obvious and will
5 in part appear hereinafter.

Summary of the Invention

~~To address the disadvantages and inefficiencies of the prior art, one embodiment,~~
of the invention is a network-based system which provides a uniform graphical user
interface that enables a user to observe, actively monitor and participate in multiple,
concurrent and different on-line auctions, from one central place at one time. Such a
system minimizes the need for the user, as a shopper, to learn how to use and exercise the
different types of user interfaces at each of the different available on-line auction sites.

According to one embodiment, the invention comprises a system residing on a
network that facilitates access by shoppers through remote computers or browsers across
15 the network to at least one host computer. One or more host databases operatively
connect to and are accessible by the host computer. The host computer communicates
with a plurality of auction sites across the network. Software resides on the host
computer, which is programmed to provide the functionality of the system. The host
database stores both shopper specific information and information retrieved from on-line
20 enterprise sites.

According to an alternative embodiment, the system of the invention provides
direct user access to the network auction sites. In other words, the system does not

require remote computers for operation. The host computer can act both as a site server computer and as a shopper access computer.

According to a further embodiment, various tools and features of the system of the invention provide shoppers with the ability to enter personal and account information to be stored in the host database. The system further enables a shopper to search the host database by category and/or keyword for items of interest that are offered for exchange by one or more of the plurality of on-line enterprise sites supported by the system.

According to another embodiment, the on-line enterprise is an auction site and the system enables shoppers to obtain relevant and current auction information relating to each of the items offered by the auction sites, including, for example, a brief item description of the products or services, minimum required bid, current-bid price, historical pricing (previous high and low price and calculated average), closing price, lot quantity, and closing time for the auction of the items. The system also enables shoppers to obtain automatic updates of current auction information on a precisely scheduled or periodic basis, or on-demand in response to a shopper request. According to a further feature, the system is adapted for enabling shoppers to place bids and counter-bids on one or more desired items through direct hyperlinks to each of the auction sites offering the items of interest.

According to another feature, the system aggregates the auction information regarding selected items in a personalized listing associated with each particular shopper. Shoppers can use such information for comparison and tracking purposes. The system can also monitor the progress of the auctions and the bids placed by shoppers at each of the auction sites and automatically notify shoppers of being outbid on items with the

notification providing a hyperlink to the relevant auction site to place a counter bid. In a further feature, the system also automatically notifies shoppers of a previously identified item of interest being newly offered for purchase by a particular auction site. According to an additional feature the system provides the automatic notification, based on a

5 previously identified category or keyword search.

One or more of the features described above, along with other features of the invention, are provided by the system, for example, through a My AuctionsSM capability, in which a shopper can request that the system create a list of relevant auction information for all of the ongoing auctions of items at each of the auction sites that the

10 user is interested in tracking, a personal Bid HistorySM maintained for each user; an Item WatchSM capability, in which the shopper is automatically informed when a particular item of interest at an auction site comes up for auction; and a Market WatchSM capability, in which the shopper can request that a keyword and/or category search be saved and the system automatically updates the search at periodic intervals and notifies the shopper of

15 any new items being offered by the monitored auction sites.

According to a further feature, the system includes an automated bidding feature wherein a shopper can establish a maximum bid for items being auctioned at one or more auction sites, and the system automatically places initial bids at the outset of the auctions and increases the bids up to the established maximum bids at one or more strategic times

20 during the auctions.

Other features, aspects and advantages of the invention will become more apparent from the following detailed description of the present invention when taken in conjunction with the accompanying drawings.

Brief Description Of The Drawings

For a fuller understanding of the nature and objects of the invention, reference should be made to the following description and the accompanying drawings, in which:

FIGURE 1 is a logical block diagram depicting interoperation between shoppers,
5 enterprises and an illustrative system according to the invention;

FIGURE 2 is a logical block diagram of a host computer according to an illustrative embodiment of the invention;

FIGURE 3 is a high-level flow diagram depicting operation of the monitor of FIGURE 1;

10 FIGURE 4 is a more detailed flow diagram depicting operation of the monitor of FIGURE 1;

FIGURES 5A and 5B provide a flow diagram illustrating features of the system of FIGURE 1;

FIGURE 6 is an illustrative Home page generated by the viewer of FIGURE 1;

15 FIGURE 7 is an Illustrative Search Results page generated by the viewer of FIGURE 1;

FIGURE 8 is an Illustrative My AuctionsSM page generated by the viewer of FIGURE 1;

20 FIGURE 9 is an Illustrative Deal WatchSM page generated by the viewer of FIGURE 1;

FIGURE 10 is an Illustrative Personal Information page generated by the viewer of FIGURE 1;

FIGURE 11 is an illustrative Categories page generated by the viewer of

FIGURE 1; and

FIGURE 12 is an illustrative Sign In / Sign Out page generated by the viewer of FIGURE 1.

Description of the Illustrative Embodiment

5 Electronic enterprise sites vary widely based upon the type of items available for exchange, and the rules associated with how exchanges are made. Items available for exchange include virtually anything of value, tangible or intangible, that can be legally exchanged for any other item of value. By way of example, items can include products, services, currency, real or intellectual property, rentals, information, promises, gambling
10 wagers and the like. Offered items need not be exchanged only for currency, but may be exchanged or “swapped” for one or more other items of the same or different type.

 Electronic auctions are particularly suited as electronic enterprise sites offering items for exchange. The illustrative embodiment of the invention is described below with respect to the monitoring of network-based electronic auction sites. However, as those
15 skilled in the art will appreciate, the system of the invention may be employed to monitor and aggregate information with respect to virtually any network-based enterprise that offers items for exchange. According to the illustrative embodiment, the network over which the invention operates is the Internet; more specifically the World Wide Web (“Web”).

20 According to the illustrative embodiment, a system of the invention retrieves information from a plurality of auction Web sites. The system of the illustrative embodiment searches selected auction site Web pages and collects information including, for example, a brief description of the items available for purchase, minimum required

bid price, current bid price or prices, closing price, lot quantity, and closing time for the auction for each of the items available for purchase. The system of the invention stores the item information in a database. Shoppers search the database by category and/or keyword for items of interest. The system of the invention signals the shopper when the items of interest are offered for auction by one or more of the plurality of on-line auction sites supported by the system. Another feature of the illustrative system of the invention is that it automatically updates current auction information on a precisely scheduled or periodic basis, or on an on-demand basis in response to a shopper's request, and on a timed basis to capture time-sensitive information, such as the closing price for an auctioned item. The illustrative system also enables shoppers to place bids and counter-bids on one or more items through direct hyperlinks to each of the supported auction sites.

Another feature of the illustrative embodiment is that it aggregates the auction information on shopper-specified items in a personalized listing associated with each particular shopper for comparison and tracking purposes. The illustrative system also monitors the progress of the auctions and the shopper's bids placed at each of the auction sites. The illustrative system automatically notifies shoppers of being outbid on items, with the notification providing the opportunity through a direct hyperlink to the relevant auction site to place a counter-bid. The illustrative system also automatically notifies shoppers if a previously identified item of interest is newly offered for purchase by a particular auction site. In an extension of this feature, the system of the illustrative embodiment automatically notifies shoppers regarding newly available items that fall within the scope of previously entered search information.

According to the illustrative embodiment, the system of the invention aggregates all of the information from a plurality of auction sites into a single Web site. Thus, rather than having to monitor and interact with different user interfaces of multiple auction Web sites, the illustrative embodiment enables shoppers to interact with only a single graphical user interface to more efficiently accomplish the same goal.

FIGURE 1 depicts a logical block diagram 100 of a network arrangement employing an automated auction monitoring system 102 according to an illustrative embodiment of the invention. As shown, the system 102 includes a host computer 104 and a database 106. The database 106 can include any type of non-volatile storage devices such as, magnetic, optical, or dynamic electronic storage devices. Shoppers communicate with the system 102 by way of the shopper access devices 108a-108d over the network 110. The shopper access devices 108a-108d can be, for example, work stations, personal computers, lap top computers, personal digital assistants, or any device capable of transmitting a signal between the shopper (user) and the host computer. The system 102 communicates with a plurality of auction sites over the network 110 by way of the auction site server computers 112a-112d. Although, the diagram 100 depicts a particular number of shopper access devices 108a-108d and a particular number of enterprise server computers 112a-112d, skilled artisans will appreciate that the system 102 can communicate with any number of shopper access devices and enterprise site server computers over the network 110. According to the illustrative embodiment, the network 110 is the Internet, and shoppers access the auction monitoring system 102 by accessing a Web site serviced by the host computer 104. However, the methods and system of the invention can be applied to any communication network, be it public or

~~The host computer 104 executes a plurality of software modules 114-122. The~~

5 124. Any number of multi-tasking operating systems, such as UNIX[®] or Windows/NT[®]

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shopper(s) may access the system 102 directly through the host computer 104. In that case, the viewer 118 provides the host graphical user interface pages directly to a host display device.

According to one embodiment, in response to a shopper's request, the viewer 118
5 invokes the search engine 120. In response, the search engine 120 searches the database 106 for items, which meet criteria specified by the shopper, and which are available at one or more of the scanned auction sites 112a-112d. In response to a shopper's request to place a bid, the viewer 118 invokes the site access facilitator 122. The site access
10 facilitator 122 hyperlinks the shopper to the auction site of interest. The site access facilitator 122 also enables the shopper to hyperlink back from an auction site to a GUI page of the viewer 118. In this way, regardless of whether a shopper actually places a bid, the shopper can return to the Web site of the system 102, with the viewer module 118 providing a GUI page for the shopper to monitor the status of the bidding for the item of interest. According to a further feature of the invention, a plurality of shoppers
15 can simultaneously access the system 102 via the shopper access devices 108a-108d over an Internet browser.

FIGURE 2 is a simplified block diagram of the host computer 104 of FIGURE 1. As shown, the host computer 104 includes a central processing unit (CPU) 200, a display device 202, a console input device 204, a network interface 206, an I/O port 208, and a
20 random access memory (RAM) 210, all in communication over an internal host computer bus 212. Also depicted with the host computer 104 is the database 106.

~~In operation, the database 106 communicates with the CPU 104 by way of the I/O port 208. The CPU 200 controls the operation of the host computer 104. The display~~

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device 202 displays information to a system administrator/programmer. The input device 204, which is by way of example a keyboard and mouse, enables the system administrator to direct the operation of the host computer 104. The network interface 206 enables communication between the host computer 104 and the shopper access devices 108a-108d and the enterprise sites 112a-112d, all by way of the network 110. The memory 210 stores the application programs 214 and the operating system software 218 for execution by the host computer 104. The memory 210 also stores data used by the application programs 214 and the operating system software 218.

According to the illustrative embodiment, the application programs 214 include the monitor 114, the notifier 116, the viewer 118, the search engine 120 and the access facilitator 122. The application programs 214 also include the database architecture employed for storing information in the database 106 and the tools for accumulating, aggregating, updating, storing and maintaining both auction information and personal and account information for shoppers. Suitable programming languages for the application programs 214 include Java, C, and C++.

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~~Although the system 102 is illustratively depicted with a single host computer 104, those skilled in the art will appreciate that the system operation may alternatively be distributed over a plurality of host computers, with the execution of the application programs 214 also being distributed over the plurality of host computers. Each of the software modules 114-122 will now be discussed in detail.~~

FIGURE 3 is a simplified flow diagram 300 illustrating operation of the monitor program 114 of FIGURE 1. As shown at 302, the monitor 114 causes the host computer 104 to scan/search the auction sites 112a-112d for information that is posted by those

sites and is of interest to the system 102. As shown at step 304, the host computer 104 then processes the retrieved information, by filtering out irrelevant information, such as for formatting, and by converting the relevant information to a format conducive for storage in the database 106. As illustrated in step 306, the host computer 106 then stores
5 the database formatted information in the database 106 for later shopper access by way of the user access devices 108a-108d through the viewer 118 and the search engine 120. The information stored in the database 106 can also be accessed by other software modules such as the notifier 116.

Performing the scanning step 302 at regular time intervals, such as every thirty
10 minutes, ensures that the information stored in the database is relatively fresh. Without frequent monitoring, auction information can become outdated and thus virtually valueless to shoppers. According to the illustrative embodiment, the monitor program 114 schedules the scanning step 302 of FIGURE 3 at specific time intervals, at dynamically occurring instances to accommodate particular auction circumstance as they
15 arise over time, and as discussed in further detail below with regard to FIGURE 4, at the request of a shopper.

~~Update scheduling based upon auction specific circumstances varies based upon~~
the information gathered at a particular auction site. For example, the closing time for the bidding associated with the sale of a particular item is unique to that item.

Sub A6 20 Information associated with bid and final sale statistics for an item may only be available at the auction site for a limited time after the closing time for the item. Thus, the monitor 114, identifies the closing time for particular items during an initial scan of the auction site, and then schedules a precisely timed scan of that same auction site to gather the

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~~closing time statistics associated with the particular items. For efficiency, auction site scans, whether regularly scheduled, based upon specific anticipated events (such as an auction closing time), or shopper initiated, are all used to gather other information that happens to be available.~~

5 FIGURE 4 shows a more detailed flowchart 400 illustrating operation of the monitor 114. In operation, the system 102 initializes the host computer 104 to perform auction site scans at precisely scheduled times, preset time intervals, or on demand. The scheduling may be dynamically determined based upon the content of previously scanned information. As shown at 401, the monitor 114 tests to determine if an precisely
10 scheduled anticipated event scan is required. If not, as shown at 402, the monitor 114 tests to determine if a preset time interval has elapsed. If a preset time interval has not elapsed, as shown at 404, the monitor 114 tests to determine if a shopper has requested that the auction information in the database 106 be updated. The monitor 114 continues to test for the occurrence of an anticipated event, the elapse of a preset time interval or a
15 shopper request.

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In response to detecting one of these occurrences, the monitor 114 performs the scanning operation 302 of FIGURE 3. As shown at step 406, the scanning operation 302 includes locating HTML pages in an HTML page hierarchy tree of the auction site. Additionally, the scanning operation 302 can include locating XML pages in an XML
20 hierarchy tree of the auction site. In the illustrative embodiment, the database 106 stores configuration files for each of the monitored auction sites. The configuration files indicate in which fields of the HTML pages information of interest is stored. As indicated at step 408, the monitor 114 uses the configuration files to scan out HTML

formatting and other non-textual information from each HTML page, leaving pure text, which the monitor 114 converts to a UNICODE representation. As shown at 410, the processing step 304 of FIGURE 3 includes pattern searching the UNICODE text using regular expression algorithms to search for specific text phraseology. As indicated at 5 412, the processing step 304 also includes parsing identified text strings into specific data types and then, as shown at 414, aggregating, organizing and structuring a subset of the individual data types into database tables and records. Scanning the HTML pages, as described in step 302, is referred to as "crawling" the auction site.

As indicated at 416, subsequent to organizing the data types into database tables
10 and records, the monitor 114 determines whether new database records need to be created or whether existing database records need to be updated. If the monitor 114 detects a new item listed for exchange at one of the auction sites, then as shown at 418, it creates a new record for the item in the database 106. Alternatively, if a record already exists for the item, then as shown at 420, the monitor 114 updates the auction information for the
15 existing record. As shown at 422 and 424, prior to storing the updated auction information in the database 106, the monitor 114 may also calculate additional statistical information, such as historical pricing information for items offered for purchase at the auction site.

The data extraction and processing method illustrated by steps 406-414 is
20 particularly insensitive to the manner in which auction sites post information. As discussed above, the monitor 114 strips away format information from the textual content. In this way, the monitor 114 operates independently of formatting and other site

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~~aesthetics, such as color schemes. This insensitivity enables the illustrative system 102,~~
~~to readily adapt to changes in auction site formatting.~~

A further feature of the illustrative monitor 114 is that it includes an expiration timer, capable of being updated. The expiration timer is associated with records in the
5 database 106. The monitor 114 uses the expiration timer for periodically identifying and deleting or transferring records from the database 106 after an established time period has elapsed, and for initiating additional processing and/or notification.

In the illustrative embodiment, the HTML page crawler executes continuously as a Java[®] application controlled by a scheduler component, configuration files which map
10 particular auction site HTML page trees and the associated informational content, a Java[®] “spider” class that discovers new HTML pages, an HTML parser to find hyperlinks between pages, an item category parser to categorize pages of items within a taxonomy of categories, and an item parser to extract item-specific, auction-related information. The spider class is capable of feeding back newly discovered HTML page information to the
15 configuration files automatically. The monitor 114 performs the regular expression searching functionality via the Perl 5 standard, implemented in Java[®]. The monitor 114 also filters out illegal items and flags errors to a host computer administrator/programmer by way of log files and the display device 202.

Site information that exists only inside a limited time window force real-time
20 page crawling performance constraints upon the crawler. Accordingly, the system 102 employs multi-threaded HTML page crawlers, which in effect, crawl multiple portions of an HTML tree in parallel to minimize the over all time to crawl the entire auction site HTML tree.

Sub A9 5 ~~The viewer 118 executes on the host computer 104 to provide a graphical user interface for the system 102. In the illustrative embodiment, the viewer 118 provides a system Web site, an example of which is located at address [www.biddersedge.com]. At the system Web site, the viewer provides a plurality of Web pages that enable a shopper to monitor and participate in auction activity occurring at a plurality of auction sites. The viewer 118 includes foreground process software that detects signals from the shopper access devices 108a-108d. Preferably, a shopper enters requests at a shopper access device 108a-108d by way of a mouse or keypad. The viewer 118 detects the requests and responds by displaying the requested information.~~

10 The pages created by the viewer 118 each provide different information to a shopper. Accordingly, the viewer 118 also enables shoppers to navigate between each of the available pages. Briefly, the GUI pages generated by the viewer 118 include a page navigation menu bar, near the top of each page, which allows the shopper to directly navigate to any of the other viewer pages. When a shopper logs into the Web site of the
15 illustrative embodiment, the viewer 118 displays a Home page to the shopper. The shopper interacts with the search engine 120 from a plurality of the pages generated by the viewer 118. An illustrative Home page, along with other illustrative GUI pages generated by the viewer 118 are discussed in further detail below with respect to FIGURES 6-12.

20 In response to a shopper's command, the viewer 118 can invoke the search engine 120 to query the database 106 for items associated with a particular item category and/or keyword expression. Alternatively, the viewer 118 can invoke the site access facilitator 122 to enable the shopper to directly access and participate in a particular auction site

activity, such as bidding. The site access facilitator also enables the shopper to hyperlink from an auction site back to the Web site of the illustrative embodiment.

FIGURES 5A and 5B provide a flow diagram 500 which illustrates features of the system 102. As skilled artisans will appreciate, there exists innumerable paths through which a shopper might traverse the features of the system 102. Thus, the flow diagram 500 is intended to cover only an exemplary path, with the intention of illustrating the many features of the invention.

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~~In the illustrative flow diagram 500, a shopper enters the system 102 by way of the Home page 600 depicted in FIGURE 6. The Home page 600 includes a page navigation menu bar 602, which highlights the Home page menu button entry 604 to indicate that the shopper is currently viewing the Home page 600. The other buttons 606-616 on the navigation menu bar 602, enable a shopper to navigate to other GUI pages generated by the viewer 118. By way of example, the button 606 signals the viewer 118 to present the Sign In/Sign Out page 1200 of FIGURE 12. The button 608 signals the viewer 118 to present the Categories page 1100 of FIGURE 11. The button 610 signals the viewer 118 to present the My AuctionsSM page 800 of FIGURE 8. The button 612 signals the viewer 118 to present the Deal WatchSM page 900 of FIGURE 9. The button 614 signals the viewer 118 to present the Personalize page 1000 of FIGURE 10, and the button 606 signals the viewer to present a Help page (not shown).~~

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~~A feature of the illustrative system 102 is that it enables shoppers to search for items in the database 106 based on categories, keywords and any combination of the two. In the illustrative flowchart 500, a shopper decides at 502 whether to search for an item by categories. To facilitate such a search, the Home page 600 includes a categories list~~

626. The categories list 626 displays high-level categories of items contained in the database 102. In response to a shopper selecting a high-level category 626, the system 102 determines in step 506 whether any subcategories of the selected category include further subcategories. If such is the case, the viewer 118, in step 508, displays the subcategories for the selected category. Additionally, the system 102 enables the shopper to further narrow their search by selecting one of the displayed subcategories. As indicated at 506 and 510, if no further subcategories exist, the viewer 118 displays the search results by way of the Search Results page 700 of FIGURE 7.

As indicated at 512, the search engine 120 also enables shoppers to limit an item search by keyword. To facilitate this feature, the Home page 600 provides "Find It" interfaces 618 and 620. The "Find It" interfaces 618 and 620 have associated text entry locations 622 and 624, respectively, for entering keyword queries. Should a shopper decide to perform a keyword search in step 514, the shopper enters the keywords in either of fields 622 or 624. As indicated at 516, the search engine 120 also enables shoppers to limit the type of keyword search performed. To facilitate this feature, the page 600 includes a pull-down menu bar 628. As indicated in step 518, using the menu bar 628, a shopper can direct the search engine 120 to search the database 106 based on all of the words in the field 628, or alternately, based on any of the words in the field 628. Additionally, the shopper can limit the search to the "+/- Style" with regard to the words in the field 628. A "+" character preceding a keyword narrows the search to items containing at least one instance of the keyword. A "-" character narrows the search to items not having any occurrences of the keyword. As indicated at 520, the search engine 120 further enables shoppers to limit a search by auction site. As shown at step 522,

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626, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

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~~should a shopper decide to so limit a search, the shopper uses the pull-down menu 630 to restrict the keyword search to items at one of the supported auction sites, or alternatively, to items at any of the supported auction sites, by default.~~

As indicated at 524, according to the illustrative embodiment, shoppers can adjust

5 the search criteria. By way of example, a shopper can choose to restrict a search further by category in steps 502 and 506, by keyword in step 512, by type of search in step 516, or by auction site in step 520. Additionally, a shopper can employ any combination of keyword and category restrictions on a search.

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~~A further feature of the illustrative embodiment is that the viewer provides a~~

10 graphical display of the categories to which a shopper's keyword search applies. By way of example, in response to a shopper selecting a category from the category list 626, the viewer 118 displays any available subcategories. Similarly, in response to a shopper selecting a displayed subcategory, the viewer 118 displays any available subcategories of the selected subcategories. If a shopper conducts a keyword search, the specified search

15 criteria only applies to the categories or sub-categories displayed on the current GUI page by the viewer. This feature aids the shopper in visually restricting searches to particular "branches, or leaves" of a category hierarchy tree (displayed in the categories list 626), while further restricting how the search engine interprets the keyword search text. As discussed above with respect to step 510, when no more subcategories are available, the

20 viewer 118 navigates to the Search Results page 700 and displays the search results in the ~~search results section 724.~~

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A14*

~~As illustrated at 526, a shopper initiates a search by actuating (clicking) one of the "Find It" buttons 618 or 620. As shown at 510, actuating a "Find It" button 618 or 620~~

~~causes the viewer 118 to display the results returned from the search engine 120.~~

FIGURE 7 shows an illustrative ~~Search-Results page 700 generated by the viewer 118,~~
~~for displaying search results returned from the search engine 120.~~

~~As illustrated in FIGURE 5B and as discussed below with respect to FIGURES 7-~~

5 12, the system 102 provides shoppers with a number of features by way of the Results
page 700. By way of example, as illustratively depicted at 534 in FIGURE 5 and at 724
in FIGURE 7, a shopper can select the type of auctions to be included in a search. More
specifically, the system 102 enables shoppers to select whether they want to participate in
person-to-person auctions, merchant-to-person auctions or both. The system 102 defaults
10 to including both. If a shopper decides to select an auction type, then the shopper
~~performs the auction selection (step 536) by selecting one of the radio buttons 726a-726c.~~

~~Another feature of the system 102, illustrated at 538 in FIGURE 5 and at 728 in~~
FIGURE 7, is that a shopper can narrow a search by matching category from the Search
Results page 700. If, as indicated in step 540, a shopper chooses to narrow the search by
15 category, the shopper selects one of the match categories 728 displayed in the matching
categories field 730. By selecting one of the matching categories, the displayed search
~~results will be restricted to those items falling within the selected matching category 728.~~

~~As shown in FIGURE 7, the Search Results section 702 of the page 700 includes~~
a Current Auctions field 704. The Current Auctions field 704 displays items returned by
20 the search engine 120, along with the auction sites at which the items can be found. The
Search Results section 702, also includes an Approx. Bid field 706, a Close field 708, a
Past Prices field 710, and a Tools field 712. The Approx. Bid field 706 displays the most
~~up to date information with regard to the current bid on the item. The Close field 708~~

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~~provides the bid closing time and date. The Past Prices field 710, as in the case of field 810a and 810b of FIGURE 8, provides historical pricing information, if available.~~

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A18

~~An additional feature of the system 102 illustrated at 542 in FIGURE 5B and at 714 in FIGURE 7, is that a shopper can choose whether to include items listed in the search results field 702 in the My AuctionsSM list 802 of the My AuctionsSM page 800. The search engine 120 periodically updates auction information for items so listed. In this way, the system 102 enables shoppers to compare prices for the same item being offered at different auctions. To store an item in the My AuctionsSM list (step 544), the shopper actuates the button 714.~~

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~~Another feature of the system 102, illustrated at 546 in FIGURE 5B and at 716 in FIGURE 7, is that a shopper can choose whether to include items listed in the search results field 702 in the Item WatchSM section 908 of the Deal WatchSM page 900 of FIGURE 9. The search engine 120 periodically searches the auction sites 112a-112d to determine the availability of items placed in the Deal WatchSM list. According to the illustrative Deal WatchSM feature, the monitor 114 only signals a shopper that a Deal WatchSM occurs if the monitor locates an exact match for the listed item. Thus, Deal WatchSM related searching is less time consuming than the searching associated with the Market WatchSM feature, and therefore can be performed more frequently.~~

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~~According to the illustrative embodiment, the buttons 714 and 716 signal the viewer 120 to display an updated Search Results page 700 to the shopper. However, if the shopper wishes to navigate, for example to the My AuctionsSM page 800, the shopper clicks on the hyperlink field 718. Similarly, to signal the viewer 120 to navigate to the Item WatchSM list 908 in the Deal WatchSM page 900, the shopper clicks on the hyperlink~~

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~~field 720. Moreover, shoppers can signal the viewer to navigate to other GUI display pages by actuating one of the buttons in the navigation tool bar 602 or by actuating one of the hyperlink fields in the footer section 603.~~

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~~As shown in FIGURE 5 at 528, the system 102 also enables shoppers to decide~~

5 whether to store a particular search strategy. As shown at 530, if a shopper decides to store a search strategy, the shopper actuates the Market-WatchSM button 722. In response to activation of the Market WatchSM button 722, as indicated at 532, the viewer 118 hyperlinks the shopper to the Deal WatchSM page 900, and the search engine 120 periodically repeats the search using the stored search criteria. In response to new items

10 ~~falling within the scope of the stored search criteria, the notifier 116 signals the shopper.~~

The search results may be displayed to the shopper in a variety of formats. The system 102 is also capable of sorting the search results prior to presentation to the shopper, according to criteria established within the system 102, such as, by category, title, auction site, price, closing time of the auction and the like.

15 The system 102 is also capable of correlating the subject matter of a particular shopper's search with the advertisements of various companies to display advertisements to the shopper for items in which the shopper might be interested. The advertisements may be displayed by the system 102 to the shopper according to other criteria, for example, what items the shopper has requested that the system 102 tracks, the types of

20 searches conducted by the shopper, the various features of the system that the shopper has accessed, and any other criteria that advertisers believe indicates that their advertisements will find the desired audience.

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~~FIGURE 8 shows an illustrative My AuctionsSM page generated by the viewer 118~~
for displaying the current auction status of all items added to the Auction WatchSM item
list for example, by way of the button 714 of FIGURE 7. As shown in FIGURE 8, the
My AuctionsSM page 800, includes a navigation menu bar 602 and a footer hyperlink field
603 for enabling a shopper to navigate between available GUI pages. The page 800 also
includes keyword search text fields 622 and 624, "Find It" search initiation buttons 618
and 620, search narrowing menus 628 and 630, and a category list 626. The page 800,
further includes a My AuctionsSM section 802.

Sub A22

The My AuctionsSM section 802 includes an item field 804 for displaying the
monitored items. The section 802 also includes a Quantity and Price field 806, a Close
field 808, a Price History field 810, and a Bid field 812. The Quantity and Price field 806
displays the number of items available and the asking price. The Close field 808 displays
the time and date at which the auction closes the bidding for the item of interest. The
Price History fields 810a and 810b provide information regarding prior sales of the item
of interest, if available. The Bid field 812 provides relevant bid status information to the
shopper, such as, the shopper has not bid, the shopper has bid and is losing, the shopper
has bid and is winning. If the shopper has not entered account information for an auction
site listed in the My AuctionsSM section, the system 102, by way of the field 812, prompts
the shopper to activate a hyperlink to record account information for the auction site.

Sub A23

~~The My AuctionsSM section 802 also includes two buttons 814 and 816. The
button 814 enables a shopper to remove items from the My AuctionsSM page 800. The
button 816 enables a shopper to add an item, displayed in the My AuctionsSM section 802,
to the Item WatchSM section 906 of the Deal WatchSM page 900 shown in FIGURE 9. The~~

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~~My AuctionsSM page 800 also includes an update button 818. Actuating the update button 818 signals the monitor 114 to update the auction information with regard to the items listed in the My AuctionsSM section 802.~~

In operation, the My AuctionsSM feature serves as a personal list of desired items, and provides a control panel 800 that enables a shopper to monitor the items all at once in a centralized location, even if the items are being offered simultaneously by different auction sites. With this capability, shoppers can track the status of items they are only considering, as well as the status of items on which they have placed bids.

Through the use of the button 816, a shopper can add a plurality of items to the displayed list. The system automatically updates the auction information for each of the items on the list, preferably every thirty minutes; when requested by the shopper by way of the update button 818; or when certain events or milestones occur. The My AuctionsSM list is useful as a comparison shopping tool, by enabling the shoppers to list and track the auction information for related items offered by one or more auction sites, including, for example, price histories, current bids and closing times.

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A24

~~The system 102 enables the shopper to initiate participation in an auction for any of the items listed on the My AuctionsSM list. The system 102 accomplishes this by providing hyperlinks to the auction sites offering the listed items for purchase. A shopper initiates the hyperlink by clicking on a listed item. In response to a shopper activating the hyperlink for a given item, the site access facilitator 122 establishes a connection across the network 110 between the shopper and the auction site associated with the item. The shopper places a bid on the item according to the procedures dictated by the auction site, which typically include registering a user name or other identifier with the auction site~~

~~that is unique to the shopper. As mentioned above, from the My AuctionsSM list 802, the system 102 enables shoppers to enter auction site registration identification names as account information for each particular item in the list. Once the account information is entered by the shopper for the items on which the shopper has placed bids, the account information is stored in the database 106, and the system 102 uses the account information to track the status of the shopper's bids at the auction sites. As also previously mentioned, the system 102 reports the status of the shopper's bids on the My AuctionsSM page 800 and optionally, automatically sends the shopper a notification by way of electronic mail, Internet messaging, pager, facsimile, digital telephone or other computer initiated communication method. According to the illustrative embodiment, the notification provides the shopper with the number of items available that fall within the scope of the Market WatchSM search parameters. When the shopper responds to the notification, the system 102 provides the shopper with a complete list of qualifying items, at the time of the shopper's response.~~

According to a further feature of the illustrative embodiment, the system 102 maintains a personal history of the items of interest and related auction information for the shoppers, including items on which the shoppers have bid in the past and the final closing price of the items for reference purposes. The shopper can request that a listing of the personal bid history be displayed for viewing by the user, for example, by way of the link 818 of FIGURE 8 and the footer section 603. Shoppers may also reorder the list, and remove items from it.

~~FIGURE 9 depicts an illustrative Deal WatchSM page 900 generated by the viewer 118. As in the case of the previous-discussed GUI pages, the Deal WatchSM page 900~~

includes a menu bar 602 for enabling shoppers to navigate between the available GUI pages. The page 900 also includes keyword search fields 622 and 624, a categories list 626, search limiting menus 628 and 630, and search initiating buttons 618 and 620.

~~The Deal WatchSM page 900 further includes a Market WatchSM section 902. The~~

Market WatchSM section 902 displays a description of the search criteria to be used to identify newly available items. The previous search criteria may have been entered by way of browsing categories, entering a keyword search, or a combination of both. The Market WatchSM section includes two buttons 904 and 906. The button 904 removes items from the Market WatchSM list. The button 906 signals the monitor 114 to update the search information with respect to an associated listed item.

According to the illustrative embodiment, the system 102 automatically searches the updated auction information on a periodic basis. The notifier 116 signals the shopper in response to new items that come up for auction at the supported auction sites that fall within the scope of the stored searches. The shopper has the opportunity through a hyperlink provided by the notifier 116 to connect across the network 110 to the system 102 to review the new items being offered for purchase at the auction sites 112a – 112d.

~~The Deal WatchSM page 900 additionally includes an Item WatchSM section 908.~~

The Item WatchSM section 908 lists in field 910 items that a shopper selects for monitoring. The field 910 provides the name of the item being monitored, along with the auction site at which the item is available and the pricing history for the item. The Item WatchSM section 908 includes a button 912 for signaling the monitor 114 to discontinue monitoring an associated item and to signal the viewer 118 to remove the item from the Deal WatchSM page 900.

For each of the items listed in the field 910, the system 102 automatically searches through updated auction information. The notifier 116 informs the shopper when the item comes up for auction again at the particular auction site associated with the item. According to an additional feature, in response to the notification, the shopper can connect across the network to the My AuctionsSM page 800 where the item is automatically added to the My AuctionsSM list. Items can also be added to the field 910 list from the Search Results page 700, or the personal bid history of items maintained by the system 102 for the shopper.

~~FIGURE 10 depicts an illustrative Personalize page 1000 generated by the viewer~~

10 118. The Personalize page 1000 includes a Change Password section 1002, a Personal Information section 1012, and a Time Zone Correction section 1028. The Change Password Section 1002 has a field 1004 for entering a Login identification. Once a shopper enters a Login identification, he or she can enter a new password in the field 1006. The shopper then repeats the new password in the field 1008. The shopper
15 ~~actuates the button 1010 to submit the updated information.~~

~~The Personal Information section 1012 enables a shopper to enter their first name in the field 1014 and their last name in the field 1016. The check boxes 1018 and 1020 enable the shopper to request confirmation of the updated personal information by way of either an email address entered in the text box 1022, or an Internet messaging address entered in the text box 1024. The shopper submits the personal information by actuating (i.e., clicking) the button 1026.~~

~~The Time Zone Specification section 1028 enables a shopper to select a time zone in which he or she is operating. The pull-down selection box 1030 provides the available~~

~~time zone selections. Actuating the button 1032 submits the shopper's time zone selection.~~

Although, not shown, the page 1000 also enables a shopper to register account information for any supported auction site at which he or she is registered for bidding.

- 5 This enables the monitor 114 to detect and track the shopper's bidding activity at the supported auction sites 112a-112d.

FIGURE 11 depicts an illustrative Categories page 1100 generated by the viewer 118. The Categories page 1100 enables a shopper to expand the item category hierarchy tree. The page 1100 includes a Category Index section 1102. The Category Index
 10 section 1102 includes a list of categories 1104. In response to a shopper selecting one of the categories 1104, the viewer 118 displays a list of related sub-categories, much in the same way as when a shopper selects a category from the Category list 626 in FIGURE 6.

~~FIGURE 12 depicts an illustrative Sign-In/Sign-Out page 1200 generated by the viewer 118. Navigating to this page automatically logs the shopper out of the system 102. The page 1200 gives the shopper an opportunity to re-log into the system 102 by entering a member name in the field 1202, a password in the field 1204, and actuating the submit button 1206.~~

Thus, from the above description of FIGURES 5-12, skilled artisans will appreciate that searches can be initiated and then narrowed from a number of the GUI
 20 pages generated by the viewer 118.

The site access facilitator 122 of FIGURE 1 will now be discussed. The site access facilitator 122 of operates in conjunction with the viewer 118 to provide a shopper with hyperlinks to any of the auction sites 112a-112d monitored by the shopper. In

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operation, the access facilitator 122 logically "plants" the Internet URL addresses for the auction sites associated with each listed item behind the item. Thus, in response to a shopper selecting a listed item, the access facilitator 122 hyperlinks the shopper to the page of the auction site associated with the selected item. The shopper may participate in the bidding or other site specific activity at the linked site, or actuate the browser BACK button to return to the previous viewer 118 generated page.

As discussed above with respect to FIGURE 4, the monitor 114 extracts information from the auction sites 112a-112d. The host computer 104 then indexes various data from the extracted auction information and associates that data with categories and subcategories established within the system 102. The categories and subcategories were discussed above with respect to the Categories list 626 and the Categories page 1100. In effect, the host computer 104 creates a mapping between the categories and subcategories and the auction item information records stored in the database 106.

Such a mapping is illustrated below. As shown, in response to shopper's search using the keyword "Pentium[®]" the search engine 120 determines that there are three items stored in the database 106 containing the keyword. As illustrated, item 5 is a Zenith[®] Pentium[®] Desktop computer. The record provides the price (\$649.00), and the network address of the auction site at which the item can be found.

Pentium	1, 5, 9	<i>the word pentium is found in items 1, 5, and 9</i>
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5	NEW Zenith Pentium Desktop computer	\$649.00	[network address of auction site]	<i>Record of item 5</i>
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The viewer 118 displays the retrieved records, formatted as search results, to the shopper.

A further feature of the illustrative embodiment is that the system 102 enables
5 shoppers to enter comments regarding items, auction sites, and various features of the system 102. TABLE 1 provides an illustrative database structure for storing shopper comments. As shown below, TABLE 1 includes a first column identifying the data element name, a second column identifying the data element type, and a third column providing a description of the data element.

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DATA NAME	DATA TYPE	DATA DESCRIPTION
Time	Long	Time this comment was entered into the system
Batch number	Long	Part of item reference
Item number	Integer	Part of item reference
User ID	Long	User who entered the comment
Comment	String	Text of the comment

TABLE 1

Another feature of the illustrative system 102 is that it enables shoppers to add
15 hyperlinks to auction sites, items, related items, other sites on the network 110 and the like. TABLE 2 provides an illustrative database structure for storing such information. As shown below, TABLE 2 includes a first column identifying the data element name, a second column identifying the data element type, and a third column providing a description of the data element.

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DATA NAME	DATA TYPE	DATA DESCRIPTION
Time	Long	Time this hyperlink was entered into the system
Batch number	Long	Part of item reference
Item number	Integer	Part of item reference
User ID	Long	User who entered the hyperlink
Link type	Integer	1=retail site, 2=item review, 3=manufacturer's spec page,

DATA NAME	DATA TYPE	DATA DESCRIPTION
		etc.
Link	String	Network address entered by user

TABLE 2

An additional feature of the illustrative system 102 is that it enables a shopper to
5 rate various system features. TABLE 3 provides an illustrative database structure for
storing ratings information. As shown below, TABLE 3 includes a first column
identifying the data element name, a second column identifying the data element type,
and a third column providing a description of the data element.

DATA NAME	DATA TYPE	DATA DESCRIPTION
Time	Long	Time this rating was entered
Batch number	Long	Part of item reference
Item number	Long	Part of item reference
User ID	Long	User who entered this item of interest
Rating	Byte	Numerical rating (scale may be different for different things)

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TABLE 3

As mentioned above, the system 102 may be employed to monitor virtually any
network-based enterprise that offers items for exchange. With regard to the illustrative
auction site monitoring embodiment, the system 102 supports at least three different
15 types of electronic auction sites: merchant-to-person; person-to-person and business-to-
business.

In a person-to-person auction the company that administers the auction site is not
the actual seller of the item, but instead acts as an intermediary between the seller and the
buyer. The person-to-person auction is similar to providing a bulletin board of classified
20 advertisements. Typically, the auction site is not responsible for the final transaction;
rather the highest bidder and the seller contact each other after the auction is closed to

arrange payment for and delivery of the item. Though the seller can be a person, it can also be a business. This type of transaction is based partially on trust, because the transaction is not automatically consummated at the time of the auction closing. Several of these types of auction sites provide a service for posting comments and ratings from other buyers, and some of these types of auction sites offer an optional service (for a fee) where they will act as an escrow agent for the transaction. As discussed above with respect to TABLES 1-7, the illustrative system 102 of the invention also enables shoppers to provide comments and/or ratings of the supported auction sites.

Merchant-to-person auction sites sell the item directly to the buyer, similar to purchasing an item from a store. There is often some type of warranty provided on the item, and the auction site itself is responsible for completing the transaction with the buyer. Typically, individuals cannot list items with these auction sites. The buyer typically provides a credit card to register to bid on items, and once the buyer places a bid, the buyer generally cannot withdraw it. The final price of the item, plus shipping, is billed to the buyer's credit card, and the item is automatically shipped to the buyer..

Business-to-business auctions facilitate the sale of merchandise between two companies, as opposed to individuals. Typically, merchandise is sold in volume and in a wholesale manner.

In this way, the invention provides a network-based system and methods for aggregating information enterprises offering items for exchange over a communication network, wherein the enterprises include, but are not limited to on-line auction sites, and wherein according to one embodiment, the monitoring includes retrieving, processing,

storing, and displaying to a shopper information regarding items offered for purchase at the on-line auction sites.

Having described the invention, what is claimed for letters Patent is:

[illegible]